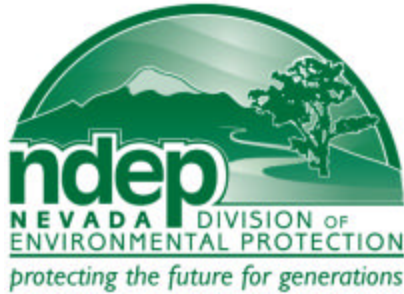


Student Workbook

Module 1



Solid Waste & Recycling Curriculum



MY GARBAGE

Module 1

MY GARBAGE

An Exploration of Solid Waste

Lesson 1 – **Just a Dream**

*Environmental Intro Using
Van Allsburg's Just A Dream*

Lesson 2 – **It's the Old Style**

Landfill-Municipal Solid Waste

Lesson 3 – **My Landfill is Sanitary**

Landfill-Municipal Solid Waste

Lesson 4 – **How Long Does Trash Last?**

Waste Decomposition

Lesson 5 – **Potato Chip Dilemma**

Reduce

Lesson 6 – **Play It Again, Sam**

Re-use

Lesson 7 – **Warhol Waste**

Art Project/Assessment: Collage

Lesson 8 – **Warhol Waste**

Art Project/Assessment: Collage

Solid Waste and Recycling Curriculum
Lesson 1

Name:_____

Just a Dream

Date:_____

Objectives: I will be able to describe how my actions are related to the world around me.

Discussion questions:

Walter's ideas change over the course of the story.

What does he learn from the dream?

Does his character change?

Describe how technology has had an impact on the story, both good and bad.

Solid Waste and Recycling Curriculum

Lesson 1

Just a Dream

Name:_____

Date:_____

Closure question:

“How do your actions affect the world around you?”

Solid Waste and Recycling Curriculum
Lesson 2

Name:_____

It's the Old Style

Date:_____

Objectives: I will understand the “path” waste takes from consumer to landfill.
I will be able to apply mathematical calculations to determine the amount of waste we produce.
I will understand the basic structure of a landfill.
I will construct a model landfill.

Vocabulary:

Municipal Solid Waste:

Landfill:

Transfer Station:

Per Capita:

Leachate:

Vector:

Groundwater:

Solid Waste and Recycling Curriculum
Lesson 2

Name:_____

It's the Old Style

Date:_____

The Calculations:

How much trash is produced in Nevada per capita each day? _____

How many students are in this class? _____

How many people are in Reno? _____

How many people are in Sparks? _____

Please calculate the waste produced by the students in this class each day.

Please calculate the waste produced by the people in Reno each day.

Please calculate the waste produced by the people in Sparks each day.

Please calculate the waste produced by the people in Reno-Sparks each day.

Please calculate the waste produced by the people in Reno-Sparks each week.

Please calculate the waste produced by the people in Reno-Sparks each month

Please calculate the waste produced by the people in Reno-Sparks each year.

Do you think there are adverse effects of landfills?

Solid Waste and Recycling Curriculum
Lesson 2

Name: _____

It's the Old Style

Date: _____

Please draw the layers of the Old Style Landfill.

Homework

On a computer that has access to the internet, please visit <http://www.epa.gov/recyclecity/mainmap.htm>. *Find the landfill within the city. Use the information you gather to answer the following questions.*

1. When Recycle City was called Dumptown, the Old Landfill was used. What was put in the landfill?
2. What happened when poisonous liquids (caused by the trash) seeped into the soil?
3. When Dumptown became Recycle City, how did the government fix the groundwater problem?

Solid Waste and Recycling Curriculum

Name:_____

Lesson 2

It's the Old Style

Date:_____

4. When Recycle City set up the New Landfill, they also set up a Materials Recovery Facility. What does this facility do?

5. Besides the reduction of waste, what is the biggest difference between the Old Landfill and the New Landfill?

6. Please describe each of the five layers in a landfill liner.

7. Is the model landfill that we made in class more like the Recycle City Old Landfill or like the New Landfill?

Solid Waste and Recycling Curriculum

Lesson 2

Name:_____

It's the Old Style

Date:_____

8. Which landfill is better for the environment? Why?

Solid Waste and Recycling Curriculum
Lesson 3

Name:_____

My Landfill is Sanitary

Date:_____

Objectives: I will understand the basic structure of a sanitary landfill.
I will understand the structural difference between the old style and the sanitary landfill.

Vocabulary:

Landfill Liner:

Geotextile Fabric:

Sanitary Landfill:

Please draw the structure of a sanitary landfill:

Solid Waste and Recycling Curriculum
Lesson 3

Name:_____

My Landfill is Sanitary

Date:_____

Sanitary Landfill:

What are the benefits of using a sanitary landfill?

What are your general thoughts on the differences between the sanitary landfill and the old style landfill?

Why is it important to prevent leachate from getting into the groundwater?

Lesson 4**How Long Does Trash Last?**

Date: _____

Objectives: You will discover how long experts think it takes MSW to break down.
 You will create a chart for MSW decomposition times.
 You will review factors involved in MSW breakdown inside a landfill.

Vocabulary:

Decompose:

Reduce:

Reuse:

Recycle:

Biodegrade:

Decomposition List:

Group # _____

List of items	Decomposition time
Aluminum can	
Banana	
Cigarette butt	
Cotton rag	
Glass bottle	
Leather boot	
Paper bag	
Plastic 6-pack rings	
Plastic jug	
Rubber sole of leather boot	
Styrofoam cup	
Tin (steel) can	
Wool sock	

Solid Waste and Recycling Curriculum
Lesson 4

Name: _____

How Long Does Trash Last?

Date: _____

List of items	Group 1	Group 2	Group 3	Group 4	Group 5	Group 6	Group 7	Scientist's list
Aluminum can								
Banana								
Cigarette butt								
Cotton rag								
Glass bottle								
Leather boot								
Paper bag								
Plastic 6-pack rings								
Plastic Jug								
Rubber sole of leather boot								
Styrofoam cup								
Tin (steel) can								
Wool sock								

Why does it take so long for items to decompose in a landfill?

Based on the information above, why does it make sense to reduce, reuse, and recycle?

Solid Waste and Recycling Curriculum
Lesson 5

Name:_____

Potato Chip Dilemma

Date:_____

Objectives: You will understand the importance of reducing waste.
You will recognize how you can reduce waste.

Vocabulary:

Packaging:

Secondary Packaging:

Please answer the following questions:

1. The large bag of chips holds the same amount as the total contents of the smaller bags. But which option produces more waste – the single large bag or the combined smaller bags?
2. For waste management, which is preferable: One large bag or many small ones?
3. Knowing that a single large bag takes up less landfill space than many small ones - why might a shopper choose to buy many small bags instead of one large one?

Solid Waste and Recycling Curriculum
Lesson 5

Name:_____

Potato Chip Dilemma

Date:_____

4. Come up with a scenario in which one large bag would actually create more waste.
(Think outside of the blue box)

5. What does it mean when we create less trash? What can you and your family do to reduce the waste that must be landfilled.

Why should we reduce the amount of waste we produce?

Solid Waste and Recycling Curriculum
Lesson 5

Name:_____

Potato Chip Dilemma

Date:_____

When you are formulating your answer, please think outside the (blue) box. Remember to apply the concepts of Reduce and Reuse. Be prepared to discuss the assignment during the next class period.

Please write or draw your answer. (You do not actually have to bring your lunch for 2 weeks.)

Your assignment is to:

1. Come up with a way to bring your lunch to school every day for two weeks.

Your lunch should include:

- a sandwich**
- chips (or pretzels)**
- a drink**
- a dessert**
- a way to clean yourself up (hands and face)**

2. Generate as little landfill waste as possible.

Solid Waste and Recycling Curriculum
Lesson 5

Name:_____

Potato Chip Dilemma

Date:_____

Solid Waste and Recycling Curriculum
Lesson 6

Name: _____

Play It Again, Sam

Date: _____

Objectives: You will create a brochure for an item you will reuse.
You will understand the importance of reusing materials.

List of items that may be used / reused in your brochure

Please select one of the following:

- Shoe Box
- Flower Pot
- Altoid Tin
- Eyeglass Lens
- Paper Towel Tube
- Newspaper

Write your selection in the space below.

Reuse / transform the item into something that will have a different use.

Write that new “final product” in the space below

Before you begin, take one sheet of printer paper and fold it into 3 equal sections with the left panel flap over / on top.

Write your name on the bottom of page 1. (cover)

Write “What” on the bottom of page 2. (left inside panel)

Write “When” on the bottom of page 3. (center inside panel)

Write “Where” on the bottom of page 4. (right inside panel)

Write “How” on the bottom of page 5. (flap panel)

Write “Why” on the bottom of page 6. (back center panel)

Solid Waste and Recycling Curriculum
Lesson 6

Name: _____

Play It Again, Sam

Date: _____

Page 1. The original item to be transformed into the final product.

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
States item for reuse and final product	No mention of items		States one item	States original item and final product	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations	Illustration for one item. No color.	Illustration for original item and final product. No color. OR Illustration for one item. Use of color	Illustration for original item and final product. Use of color	

Page 2. What will my final product be used for?

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Describe <u>What</u> the final product is used for	Does not state what the product will be used for	Difficulty stating what the final product will be used for. Does not restate question in description.	Clearly states what the final product will be used for. Does not restate question in description. OR Difficulty stating what the final product will be used for. Restates question in description.	Clearly states what the final product will be used for. <u>Restates question in description.</u>	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations.	Illustration that does not relate.	Illustration showing what the final product is used for. No use of color.	Illustration <u>showing what the final product is used for.</u> Use of color.	

Solid Waste and Recycling Curriculum
Lesson 6

Name: _____

Play It Again, Sam

Date: _____

Page 3. When will my final product be used?

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Describe <u>When</u> the final product can be used	Does not state when the product will be used.	Difficulty stating when the final product will be used. Does not restate question in description.	Clearly states when the final product will be used. Does not restate question in description. OR Difficulty stating when the final product will be used. Restates question in description.	Clearly states when the final product will be used. <u>Restates question in description.</u>	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations.	Illustration that does not relate.	Illustration showing when the final product is used. No use of color.	Illustration <u>showing when the final product is used.</u> Use of color.	

Page 4 Where will my final product be used?

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Describe <u>Where</u> the final product can be used	Does not state where the product will be used.	Difficulty stating where the final product will be used. Does not restate question in description.	Clearly states where the final product will be used. Does not restate question in description. OR Difficulty stating where the final product will be used. Restates question in description.	Clearly states where the final product will be used. Restates question in description.	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations.	Illustration that does not relate.	Illustration showing where the final product is used. No use of color.	Illustration <u>showing where the final product is used.</u> Use of color.	

Solid Waste and Recycling Curriculum
Lesson 6

Name: _____

Play It Again, Sam

Date: _____

Page 5 How will my final product be used?

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Describe <u>How</u> the final product can be used	Does not state how the product will be used.	Difficulty stating how the final product will be used. Does not restate question in description.	Clearly states how the final product will be used. Does not restate question in description. OR Difficulty stating how the final product will be used. Restates question in description.	Clearly states how the final product will be used. <u>Restates question in description.</u>	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations.	Illustration that does not relate.	Illustration showing how the final product is used. No use of color.	Illustration <u>showing how the final product is used.</u> Use of color.	

Page 6 Why my final product is useful?

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3 3	Score Received
Describe <u>Why</u> the final product is important	Does not state why the product is important.	Difficulty stating why the final product is important. Does not restate question in description.	Clearly states why the final product is important. Does not restate question in description. OR Difficulty stating why the final product is important. Restates question in description.	Clearly states why the final product is important. <u>Restates question in description.</u>	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Includes illustrations	No illustrations.	Illustration that does not relate.	Illustration showing why the final product is useful. No use of color.	Illustration <u>showing why the final product is useful.</u> Use of color.	

Solid Waste and Recycling Curriculum
Lesson 6

Name: _____

Play It Again, Sam

Date: _____

Re-Use Brochure Rubric Score Sheet

Page 1	Points earned:
Page 2	Points earned:
Page 3	Points earned:
Page 4	Points earned:
Page 5	Points earned:
Page 6	Points earned:

Total points earned:	Total possible: 54	Percent:
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Solid Waste and Recycling Curriculum
Lesson 6

Name:_____

Play It Again, Sam

Date:_____

Solid Waste and Recycling Curriculum
Lesson 7

Name: _____

Warhol Waste

Date: _____

Objectives: You will create a collage titled “An Exploration of Solid Waste”.

Topics to be covered by the collage:

- **Landfills—waste management**
- **Waste Decomposition**
- **Waste Reduction**
- **Waste Re-use**

1. Select one sheet of green 11” X 14” paper.
2. Divide the paper into 4 equal sections.
3. Label each section with one of the four topics listed above. Each section should have a different topic.
4. Find **3** pictures in a magazine that you feel represent or depict some aspect of the topic in some way. Glue / paste these 3 pictures onto the paper in the appropriate section.
5. Label or write about each picture with an explanation as to why you chose the picture, or what it represents about the topic..

Please refer to your notes if you have any questions about the content covered.

Please refer to the rubric if you have any questions about how the collage will be graded.

Solid Waste and Recycling Curriculum
Lesson 7

Name: _____

Warhol Waste

Date: _____

“An Exploration of Solid Waste” Collage Rubric

General appearance and setup

	0	Needs Work 1	Approaching Expectations 2	Meets Expectations 3	Score Received
Paper divided into 4 equal sections	No division	Paper divided into 2 equal sections	Paper divided into 3 equal sections	Paper divided into 4 equal sections	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	
Each section labeled properly	No labels	1 OR 2 sections labeled properly	3 sections labeled properly	4 sections labeled properly	

Topic: Landfills—waste management

	0	Needs Work 2	Approaching Expectations 4	Meets Expectations 6	Score Received
Appropriate pictures representing topic	Does not contain any appropriate pictures	Contains 1 appropriate picture representing topic.	Contains 2 appropriate pictures representing topic.	Contains 3 appropriate pictures representing topic.	
Pictures labeled as to why the picture was chosen	Does not contain any appropriate explanation.	Contains 1 appropriate explanation.	Contains 2 appropriate explanations.	Contains 3 appropriate explanations.	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	

Solid Waste and Recycling Curriculum
Lesson 7

Name: _____

Warhol Waste

Date: _____

Topic: **Waste Decomposition**

	0	Needs Work 2	Approaching Expectations 4	Meets Expectations 6	Score Received
Appropriate pictures representing topic	Does not contain any appropriate pictures	Contains 1 appropriate picture representing topic.	Contains 2 appropriate pictures representing topic.	Contains 3 appropriate pictures representing topic.	
Pictures labeled as to why the picture was chosen	Does not contain any appropriate explanation.	Contains 1 appropriate explanation.	Contains 2 appropriate explanations.	Contains 3 appropriate explanations.	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	

Topic: **Waste Reduction**

	0	Needs Work 2	Approaching Expectations 4	Meets Expectations 6	Score Received
Appropriate pictures representing topic	Does not contain any appropriate pictures	Contains 1 appropriate pictures representing topic.	Contains 2 appropriate pictures representing topic.	Contains 3 appropriate pictures representing topic.	
Pictures labeled as to why the picture was chosen	Does not contain any appropriate explanation.	Contains 1 appropriate explanation.	Contains 2 appropriate explanations.	Contains 3 appropriate explanations.	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	

Solid Waste and Recycling Curriculum
Lesson 7

Name: _____

Warhol Waste

Date: _____

Topic: **Waste Re-use**

	0	Needs Work 2	Approaching Expectations 4	Meets Expectations 6	Score Received
Appropriate pictures representing topic	Does not contain any appropriate pictures	Contains 1 appropriate picture representing topic.	Contains 2 appropriate pictures representing topic.	Contains 3 appropriate pictures representing topic.	
Pictures labeled as to why the picture was chosen	Does not contain any appropriate explanation.	Contains 1 appropriate explanation.	Contains 2 appropriate explanations.	Contains 3 appropriate explanations.	
Proper use of spelling, grammar, and punctuation.	Contains more than 3 errors	Contains 2-3 errors	Contains 1 error	No errors	

Solid Waste and Recycling Curriculum
Lesson 7

Name: _____

Warhol Waste

Date: _____

“An Exploration of Solid Waste” Collage Rubric
Score Sheet

General appearance and setup	Points earned:
Landfills—waste management	Points earned:
Waste Decomposition	Points earned:
Waste Reduction	Points earned:
Waste Re-use	Points earned:

Total points earned:	Total possible: 81	Percent:
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Solid Waste and Recycling Curriculum

Lesson 7

Warhol Waste

Name:_____

Date:_____

Solid Waste and Recycling Curriculum
Lesson 8

Name: _____

Thoreau Think Piece: Day 2

Date: _____

Objectives: You will finish creating a collage titled “An Exploration of Solid Waste.”

While continuing work on the collage, please refer to the rubric presented in Lesson 7.

Please solve the following puzzles if you have completed your collage.

Recycling Vocab Search

G M K O H V K L O E K F S C I
R S Y C V D L H G S A C N H B
R R F S P I T C W O I E E Z W
M E J O F R O S S P E C E P U
Q Q T D K M E N F M E H R G D
F T N A P E W G G O T A G I U
F A Q O W O C R D C W F B B O
L S S P R D T U U E A O L J Q
S T Z B L E N G D D V R R S R
V H E G Q A M U H E C E M M G
M W N D C M S N O A R C B P S
R E U S E V Z T L R U Y G A N
L E A C H A T E I L G C S P Q
B G M M U Q Q D R C M L U E Z
I E X H R O S R O T C E V R W

BROWNS
COMPOST
DECOMPOSE
GREENS
GROUNDWATER
LANDFILL
LEACHATE
PAPER
PLASTIC
RECYCLE
REDUCE
REUSE
VECTOR
WORMS

Solid Waste and Recycling Curriculum
Lesson 8

Name: _____

Thoreau Think Piece: Day 2

Date: _____

Recycle Cryptogram

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z

7 19 16 9 9 20 11 2 11 13 17 11 26 10 21 15 10 9 11 9

Recycle tiles

N E R	D F I	I T A	S T E	R Y	L L S	S A N	M
L A N	U S	E A	L I	S Y			

Unscramble the tiles to reveal a message.